1711

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Haruo OTAKE et al — Group Art Unit: 1711

Serial No.: 10/509,674 — Examiner: Olga Asinovsky

Filed: October 8, 2004 — P.T.O. Confirmation No.: 6118

For: MASTERBATCH PELLET MIXTURE

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: October 6, 2006

Sir:

Reconsideration of the rejection contained in the Office Action dated July 10, 2006, in the above-identified application in view of the following detailed comments is respectfully requested.

In the Office Action, claims 1-3 were rejected under 35 USC § 102(b) as being anticipated by the patent to Akao et al. In making this rejection, it was asserted that the cited patent teaches the entire masterbatch as defined by the claims. Reconsideration of this rejection in view of the following comments is respectfully requested.

Before discussing the rejection in detail, a brief review of the presently claimed invention may be quite instructive. The subject invention relates to a masterbatch pellet mixture of a high specific gravity masterbatch pellets group (A) and a low specific gravity

masterbatch pellets group (B). Important features of the presently claimed invention include the following:

(1) In the masterbatch pellet mixture, included is a high specific gravity masterbatch pellets group (A) which has a specific gravity within a range from 1.8 to 3.5, and a low specific gravity masterbatch pellets group (B) which has a specific gravity within a range from 0.5 to 1.6.

(2) The form of each masterbatch pellet (elongated form) is represented by a value which is obtained by dividing the height of a masterbatch pellet by a bottom surface area of the masterbatch pellet. Thus, the larger the value, the larger the elongated degree of the pellet.

(3) The difference between a value which represents the form of the high specific gravity masterbatch pellets group (A) and the value which represents the form of the low specific gravity masterbatch pellets group (B) is shown by the following formula (1):

$$0.5\ (mm^{-1}) \leqq \sum_{p=1}^{m}\left(\frac{Hp}{Sp}\times Rp\right) - \sum_{q=1}^{n}\left(\frac{Hq}{Sq}\times Rq\right) \leqq 12\ (mm^{-1}) \quad (1)$$

That is, according to the presently claimed invention, the high specific gravity masterbatch pellets group (A) have a more elongated form than those of the low specific gravity masterbatch pellets group (B). Due to this important feature, the subject masterbatch pellet mixture can be stably supplied to a molding apparatus in a mixed state without separation thereof, and thus it is possible to obtain a molded product without an uneven composition which provides uneven color. It is submitted that the cited Akao et al patent does not teach or suggest the claimed masterbatch pellet mixture since, among other things, the mixtures according to the patent do not satisfy formula (1) of claim 1 of the present application.

More particularly, the Akao et al patent apparently discloses a color masterbatch resin composition for a packaging material for a photosensitive material comprising a light-shielding material dispersed in a thermoplastic resin. It is submitted that the disclosed color masterbatch resin compositions do not satisfy formula (1) as recited in claim 1. Specifically, in Example 1 of the Akao et al patent, the following two types of pellets are mixed:

10% by weight of color masterbatch resin composition pellets (cubic pellets having a length of 4 mm, a width of 4 mm and a height of 3 mm)

90% by weight of thermoplastic resin pellets (ethylene-octene-1 random copolymer resin; columnar pellets having a diameter of 3 mm and a height of 4 mm)

(It is to be noted that although the Office Action alleges that "0.935 g/cm3" is the density of the pellets, it seems that the actual density thereof is 0.925 g/cm3, since the original Japanese application of Akao et al includes the description that the density of the thermoplastic resin pellets is 0.925 g/cm3.)

The previously mentioned combination of the pellets according to Example 1 of the Akao et al patent does not satisfy formula (1) of present claim 1, and the specific gravity of the color masterbatch resin composition pellets does not satisfy the specific scope for high specific gravity masterbatch pellets of the presently claimed invention. To further clarify the differences between the presently claimed invention and that disclosed by the Akao et al patent, the specific gravity of the color masterbatch resin composition in Example 1 is calculated according to the following, and furthermore formula (1) as claimed is also calculated using the values according to the patent, as set forth below:

Specific gravity of the resin composition pellets of the Akao et al patent

Although the specific gravity of the cubic color masterbatch resin composition pellets, which comprise an interlaminar compound of antimony pentafluoride and graphite, furnace carbon black, and vinyl acetate resin, is not disclosed in the Akao et al patent, a proportional calculation may be conducted using the following values to obtain the specific gravity of the cubic color masterbatch resin composition pellets. Initially, the value of 2.99 is used as a temporary specific gravity of the interlaminar compound because the specific gravity of the interlaminar compound of antimony pentafluoride and graphite is not disclosed in the Akao et al patent. Therefore, the specific gravity of antimony pentafluoride (2.99), which is larger than that of graphite, is used to conduct the calculation. The specific gravity of furnace carbon black is 2.00, and the specific gravity of vinyl acetate is 1.20.

As a result of a proportional calculation, the specific gravity of the color masterbatch resin composition pellets is determined to have a value of 1.60. As is apparent, this value does not fall within the specific claimed range of from 1.8 to 3.5 for the specific gravity of the high specific gravity masterbatch pellets group (A) according to the presently claimed invention. Consequently, the resin composition pellets according to Example 1 of the Akao et al patent do not satisfy one characteristic of the presently claimed invention.

Formula (1) as claimed using the above values from the Akao et al patent

First, it is assumed that the cubic color masterbatch resin composition pellets of the

Akao et al patent correspond to the high specific gravity masterbatch pellets group (A) of the presently claimed invention and the columnar thermoplastic resin pellets according to the patent (columnar pellets of ethylene-octene-1 random copolymer resin including additives comprises, as a main component, a resin having specific gravity (density) of 0.925 g/cm3) correspond to the low specific gravity masterbatch pellets group (B). Then, if a calculation according to formula (1) of the present claim 1 is conducted using the height, the bottom surface area and the mass proportions of the two types of the pellets of the Akao et al patent, the following results are obtained:

> (Hp (height)/Sp(bottom surface area)) x Rp (mass proportion relative to a total mass of the high specific gravity masterbatch pellets group (A)) - (Hq (height)/Sq(bottom surface area)) x Rq(mass proportion relative to a total mass of the low specific gravity masterbatch pellets group (B))= (3mm/(4mmx4mm)) x 1 -(4mm/1.5mm x l.5rnm x 3.14)) x l= 0.1875-0.5662 =-0.3787

(Rp and Rq represent each mass proportion of the mass of the type p or q columnar masterbatch pellets relative to a total mass of the specific gravity masterbatch pellets groups (A) or (B). In Example 1 of the Akao et al patent, there are only two types of pellets, and therefore, each Rp and Rq represents the number of 1.)

As is readily apparent, this obtained value of (-0.3787) does not fall within the range

from 0.5 to 12 of formula (1) of independent claim 1. Furthermore, this negative or minus quantity obtained by formula (1) using "(height)/(bottom surface area)" indicates that the form of the low specific gravity masterbatch pellets group (B) of Example 1 of Akao et al patent (columnar pellets having a diameter of 3 mm and a height of 4 mm) has a more elongated form (that is, the ratio of the vertical length of a pellet against the horizontal length thereof is larger) than the form of the high specific gravity masterbatch pellets group (A) of Example 1 (cubic pellets having a length of 4 mm, a width of 4 mm and a height of 3 mm).

As described above, the high specific gravity masterbatch pellets group (A) should have a more elongated form than those of the low specific gravity masterbatch pellets group (B). Accordingly, the mixture according to Example 1 of the Akao et al patent does not satisfy formula (1) of the presently claimed invention.

Examples 2 to 14 of the Akao et al patent

In Examples 2 to 14, the high specific gravity masterbatch pellets group (A) do not have a specific gravity within the range from 1.8 to 3.5, and therefore do not satisfy the limitations of present claim 1. Consequently, formula (1) of the present claim 1 is not satisfied as well.

For example, in Examples 2 to 8 of the Akao et al patent, it appears that the low

specific gravity masterbatch pellets group (B) corresponds to the rubber-containing polystyrene resin (specific gravity: 1.05) containing synthetic rubber which is used for dilution of color masterbatch resin composition pellets. On the other hand, it seems that the high specific gravity masterbatch pellets group (A) corresponds to the color masterbatch resin composition pellets. When each specific gravity of the pellets is calculated using general specific gravities of raw materials used for composition by proportional calculation, obtained specific gravities of the Examples are values from 1.26 to 1.33 as shown in the following Table.

Composition	Specific gravity	Ex.1	Ex.2	Ex.3	Ex.4	Ex.5	Ex.6	Ex.7	Ex.8
Antimony pentafluoride	2.99	40							
Furnace carbon black	2.00	20	20	20	20	20	20	20	20
Vinyl acetate resin	1.20	40							
Acrylic acid ester copolymer resin	1.20		15	35	45	50	55	25	55
Rubber-containing polystyrene resin	1.05		59	39	29	24	19	49	19
Polydimethylsiloxane	1.00		5	5	5	5	5	5	5
Calcium stearate	1.12		0.5	0.5	0.5	0.5	0.5	0.5	0.5
Synthetic silica	2.20		0.4	0.4	0.4	0.5	0.5	0.5	0.5
Di-t-butyl-P-cresol	1.05		0.1	0.1	0.2	0.1	0.1	0.1	0.1
Total		100	100	100	100	100.1	100.1	100.1	100.1
Specific gravity of colored masterbatch resin composition		1.60	1.26	1.29	1.31	1.32	1.33	1.28	1.33

These values are not included within the range of 1.8 to 3.5 of specific gravity of the high specific gravity masterbatch pellets group (A) of the presently claimed invention.

Consequently, it is evident that the masterbatch pellet mixtures of Examples 2 to 8 of the Akao et al patent do not satisfy the formula (1) of present claim 1.

Examples 9 to 14 of Akao et al patent

Similar to Examples 2 to 8 discussed above, none of the color masterbatch resin composition pellets of Examples 9 to 14 of the Akao et al patent include raw materials having a high specific gravity in a sufficiently high ratio, and therefore the specific gravities thereof are not within the scope of the recited range from 1.8 to 3.5. That is, these pellets are different from the high specific gravity masterbatch pellets group (A) of the presently claimed invention. Thus, it is submitted that none of the mixtures disclosed in Examples 9 to 14 of the Akao et al patent satisfy the provisions of present claim 1.

In summary, it is submitted that the disclosures of Examples 1 to 14 of the Akao et al patent do not fall within in the recitations of claim 1 of the present application. Therefore, the Akao et al patent does not teach or suggest color masterbatch resin composition pellets having all the aforementioned characteristics (1) to (3) according to the presently claimed invention.

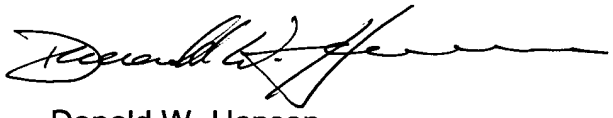
For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 103 and allowance of claims 1 through 3 over the cited Akao et al patent are respectfully requested.

In view of the foregoing, it is submitted that the subject application is now in condition for allowance and early notice to that effect is earnestly solicited.

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP



Donald W. Hanson
Attorney for Applicants
Reg. No. 27,133

Atty. Docket No. 040500
Suite 1000, 1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930
DWH/nk

23850
PATENT TRADEMARK OFFICE